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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,993	07/31/2001	Timothy Gerard Richter	GEN-0261	4998

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EXAMINER	
SHARON, AYAL I	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/918,993	RICHTER ET AL.	
	Examiner	Art Unit	
	Ayal I Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,26-28,33-45,49,50,55-69 and 72-75* is/are rejected.

7)☒ Claim(s) *2-25, 29-32,46-48,51-54,70 and 71* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/3/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-75 of U.S. Application 09/528175 filed on 03/17/00 are presented for examination. The application is a Continuation-in-Part of U.S. Patent Application 09/528,175, filed on 3/17/2000.

Claim Objections

2. Claims 46-48, 51-54, and 70-71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Examiner finds that these claim limitations are not expressly taught, either individually or in combination, by Christensen, Fleege, or Durivage.
3. Claims 2-25 and 29-32 are also objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
4. In regards to Claim 2, Christensen does not expressly teach the following:

> 2. The system of claim 1 wherein the sub-models includes at least one of a bimetal trip unit model, a magnetic trip unit model, a latch mechanism model, an operating mechanism model, and a solenoid linkage model.

Fleege, on the other hand, teaches the use of a bimetal strip, a latch and a "trip circuit" (which corresponds to a magnet) within the circuit breaker assembly (See Fleege: col.9, lines 10-40). Moreover, Fleege incorporates by reference the

Durivage patent. (See Fleege: col.9, lines 10-40). The Durivage reference (See Durivage: col.2, lines 61-67) teaches that:

> When the tripping system detects an overload, short circuit or ground fault condition, or otherwise determines that the current path should be interrupted, it engages a solenoid 112 which trips a set of contractors 114 to break the current path carrying phases A, B, and C.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, (and therefore also the teachings of Durivage) because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

However, neither Christensen, Fleege, nor Durivage, either individually nor in combination, expressly teach an "operating mechanism model" or "operating mechanism" component separate from the bimetal, latch, magnet, etc.

5. Claims 3-25, which depend from Claim 2, are therefore also objected to.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. The prior art used for these rejections is as follows:

8. Christensen et al., U.S. Patent No. 6,496,347. Filed 3/8/2000. (Henceforth referred to as "**Christensen**").

9. The Christensen reference shares the same assignee with the instant application, however, the inventive entities differ, and the filing date of Christensen precedes the filing date of the parent of the instant application.

10. Claims 1, 26-28, 34-35, 38-41, 56-58, 61-64 and 73-75 are rejected under 35 U.S.C. 102(e) as being anticipated by Christensen.

11. In regards to Claim 1, Christensen teaches the following:

> 1. A system for modeling a circuit breaker assembly and its components, the system comprising:
>
> a computer generated and interactive system model, the system model comprising hierarchically arranged sub-models, each sub-model representing a different circuit breaker function;

See Christensen, especially Fig.4, and associated text at col.4, line 20 to col.5, line 8.

> a first pin for passing simulated load current to the system model; and,
> a second pin for passing simulated load current from the system model.

Christensen does not expressly teach the use of two "pins", however, it is inherent that a model of a circuit breaker will simulate the current going in and out of the circuit breaker, because this is the only way to tell if the circuit is open or closed.

12. In regards to Claim 26, Christensen teaches the following:

> 26. The system of claim 1 further comprising simulation parameters representing each component.

See Christensen, especially Fig.1, Item 16 and Fig.2, Item26, and associated text.

13. In regards to Claim 27, Christensen teaches the following:

27. The system of claim 26 wherein a change in simulation parameters within the sub-models updates behavior of the system model.

See Christensen, especially Fig.1, Items 18 and 20, and associated text.

14. In regards to Claim 28, Christensen teaches the following:

28. The system of claim 27 wherein simulation parameters includes component dimensions.

See Christensen, especially Fig.1, Item 16 and Fig.2, Item26, and associated text.

15. In regards to Claim 34, Christensen teaches the following:

34. A method of modeling a circuit breaker assembly, the method comprising:
representing each circuit breaker function to be modeled with a submodel; and,
(See Christensen, especially: col.1, lines 35-63)

hierarchically organizing each sub-model within a system model.
(See Christensen, especially: col.1, lines 35-63)

16. In regards to Claim 35, Christensen teaches the following:

35. The method of claim 34 further comprising providing the system model within a computer accessible symbol.
(See Christensen, especially: col.5, line 50 to col.6, line 11. See references to GUI and OLE)

17. In regards to Claim 38, Christensen teaches the following:

38. The method of claim 34 further comprising varying component parameters within a sub-model.
(See Christensen, especially: the formulas in Fig.2, Item 26; and associated text at col.2, lines 59-65)

18. In regards to Claim 39, Christensen teaches the following:

39. The method of claim 38 further comprising updating the system model subsequent varying component parameters within a sub-model.
(See Christensen, especially: the feedback loop connecting Items 132, 126, and 106 in Fig.3; and associated text)

Examiner finds the parameters in Fig.2, Item 26 include component parameters.

19. In regards to Claim 40, Christensen teaches the following:

40. The method of claim 38 wherein varying component parameters comprises changing dimensions of a circuit breaker component.
(See Christensen, especially: the formulas in Fig.2, Item 26; and associated text at col.2, lines 59-65)

Note that Item 26 teaches: "Solve the 8 Transfer Functions Simultaneously to determine the optimal parameters."

20. In regards to Claim 41, Christensen teaches the following:

41. The method of claim 38 wherein varying component parameters comprises altering electrical design parameters.
(See Christensen, especially: the formulas in Fig.2, Item 26; and associated text at col.2, lines 59-65)

Note that Item 26 teaches: "Solve the 8 Transfer Functions Simultaneously to determine the optimal parameters."

21. In regards to Claim 56, Christensen teaches the following:

56. The method of claim 34 further comprising embodying the system model and sub-models within a storage medium encoded with machine-readable computer program code.
(See Christensen, especially: col.6, lines 30-47)

22. Claims 57-58 and 61-64 are rejected based on the same reasoning as claims 34-35 and 38-41, *supra*. Claims 57-58 and 61-64 are storage medium encoded with machine-readable computer program claims reciting the equivalent limitations as are recited in method claims 34-35 and 38-41 and taught throughout Christensen.

23. In regards to Claim 73, Christensen teaches the following:

73. A system for modeling a circuit breaker assembly and its components, the system comprising:
a computer generated and interactive system model, the system model comprising hierarchically arranged sub-models, each sub-model representing a different circuit breaker function; and,
(See Christensen, especially: col.1, lines 35-63)

simulation parameters within each sub-model, each simulation parameter representing an aspect of each component.
(See Christensen, especially: col.5, lines 8-26, and Fig.5)

24. In regards to Claim 74, Christensen teaches the following:

74. The system of claim 73 wherein design parameters of a component are converted to simulation parameters by the system model.
(See Christensen, especially: col.1, lines 35-63)

25. In regards to Claim 75, Christensen teaches the following:

75. The system of claim 73 wherein a change in simulation parameters within the sub-models updates behavior of the system model.
(See Christensen, especially: col.5, lines 8-26, and Fig.5)

Claim Rejections - 35 USC § 103

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

27. The prior art used for the rejections is as follows:

28. Christensen et al., U.S. Patent No. 6,496,347. Filed 3/8/2000. (Henceforth referred to as "**Christensen**").

29. Fleege et al., U.S. Patent No. 5,946,179. Issued 8/31/1999. (Henceforth referred to as "**Fleege**").

30. Durivage, III., U.S. Patent No. 5,136,457. Issued 8/4/1992. (Henceforth referred to as "**Durivage**").

31. **Claims 43-45, 49-50, and 66-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen in view of Fleege.**

32. In regards to Claim 43, Christensen does not expressly teach the following:

> 43. The method of claim 34 wherein representing each circuit breaker function to be modeled with a sub-model comprises providing a bimetal trip unit model for modeling behavior of a bimetal strip within the circuit breaker assembly.

Fleege, on the other hand, teaches the use of a bimetal strip within the circuit breaker assembly (See Fleege: col.9, lines 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

33. In regards to Claim 44, Christensen does not expressly teach the following:

> 44. The method of claim 43 further comprising arranging a bimetal heating model and a bimetal deflection model within the bimetal trip unit model.

Fleege, on the other hand, teaches the use of a bimetal strip and bimetal deflection within the circuit breaker assembly (See Fleege: col.9, lines 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

34. In regards to Claim 45, Christensen does not expressly teach the following:

> 45. The method of claim 44 further comprising accessing the bimetal heating model for generating simulated temperature rise and inputting the simulated temperature rise to the bimetal deflection model.

Fleege, on the other hand, teaches the use of a bimetal strip, and bimetal deflection due to temperature rises within the circuit breaker assembly (See Fleege: col.9, lines 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

35. In regards to Claim 49, Christensen does not expressly teach the following:

> 49. The method of claim 34 wherein representing each circuit breaker function to be modeled with a sub-model comprises providing a magnetic trip unit model for modeling interaction between a latch and a magnet within the circuit breaker assembly.

Fleege, on the other hand, teaches the use of a latch and "trip circuit" (which corresponds to a magnet) within the circuit breaker assembly (See Fleege: col.9, lines 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

36. In regards to Claim 50, Christensen does not expressly teach the following:

> 50. The method of claim 34 wherein representing each circuit breaker function to be modeled with a sub-model comprises providing a latch mechanism model for modeling behavior of a latch within the circuit breaker assembly.

Fleege, on the other hand, teaches the use of a latch and "trip circuit" (which corresponds to a magnet) within the circuit breaker assembly (See Fleege: col.9, lines 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

37. Claims 66-67 and 68-69 are rejected on the same grounds as the rejections of claims 43-44 and 49-50, respectively. Claims 66-67 and 68-69 are storage medium encoded with machine-readable computer program claims that recite the equivalent limitations to those recited in method claims 43-44 and 49-50.

38. **Claims 37, 55, 60, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen in view of Fleege, and further in view of Durivage.**

39. In regards to Claim 37, Christensen does not expressly teach the following:

> 37. The method of claim 34 further comprising testing the circuit breaker assembly, wherein testing the circuit breaker assembly comprises applying simulated load current through the system model.

Fleege, on the other hand, incorporates by reference the Durivage patent. (See Fleege: col.9, lines 10-40). The Durivage reference (See Durivage: col.2, lines 61-67) teaches that:

> When the tripping system detects an overload, short circuit or ground fault condition, or otherwise determines that the current path should be interrupted, it engages a solenoid 112 which trips a set of contractors 114 to break the current path carrying phases A, B, and C.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege,

(and therefore also the teachings of Durivage) because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

40. In regards to Claim 55, Christensen does not expressly teach the following:

> 55. The method of claim 34 wherein representing each circuit breaker function to be modeled with a sub-model comprises providing a solenoid linkage model modeling interactions between a solenoid lever and a latch lever of a circuit breaker assembly.

Fleege, on the other hand, incorporates by reference the Durivage patent. (See Fleege: col.9, lines 10-40). The Durivage reference (See Durivage: col.2, lines 61-67) teaches that:

> When the tripping system detects an overload, short circuit or ground fault condition, or otherwise determines that the current path should be interrupted, it engages a solenoid 112 which trips a set of contractors 114 to break the current path carrying phases A, B, and C.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Christensen with those of Fleege, (and therefore also the teachings of Durivage) because Fleege teaches the actual structure of the circuit breakers that Christensen attempts to model.

41. Claims 60 and 72 are rejected on the same grounds as the rejections of claims 37 and 55, respectively. Claims 60 and 72 are storage medium encoded with machine-readable computer program claims that recite the equivalent limitations to those recited in method claims 37 and 55.

42. Claims 33, 36, 42, 59 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen in view of Official Notice.

43. In regards to Claim 33:

> 33. The system of claim 1 wherein the system is embodied within a storage medium encoded with machine-readable computer program code.

Christensen does not expressly teach the use of a storage medium to store the computer program code. Official Notice is given that it would have been obvious to do so because at the time the invention was made, because it was old and well known in the art.

44. In regards to Claim 36:

> 36. The method of claim 35 further comprising accessing the symbol to reach a selected sub-model.

Christensen expressly teaches:

> "To implement the DFSS process in a generic manner, a number of stand-alone applications 200, 202, 204, 206 and 208 are used. Each application is independent and can be executed or modified without interaction with other applications."
> (See Christensen, col.4, lines 23-27)
>
> "The main process application 200 can launch each of the sub-process applications 202, 204, 206, and 208."
> (See Christensen, Col.4, lines 33-35)

Moreover, Christensen also expressly teaches:

> "A graphical user interface (GUI) is also implemented in the Java programming language in order to allow each application to communicate with other tools such as engineering tools and statistical tools.
> (See Christensen, especially: col.5, line 66 to col.6, line 3.)

While Christensen does not expressly teach that GUI was used to activate the sub-models, Official Notice is given that it would have been obvious to do because at the time the invention was made, it was well known in the art that using GUI symbols to activate software models was more user friendly than using command line instructions.

45. In regards to Claim 42:

42. The method of claim 34 further comprising testing the circuit breaker assembly, outputting experimental data, and graphing the experimental data.

Christensen teaches:

> "For the purposes of this design, a script was written that allowed communication between the dynamic simulator and a DOE table in Excel. The values were pulled from the Excel table, the simulation was run, and the outputs were automatically transferred back to Excel. In this fashion, a large number of DOE runs were executed in an automated fashion.
>
> The data generated from the DOE's is analyzed using a statistical analysis such as Minitab to determine the transfer function coefficients. Once the transfer functions were generated, variability of each parameter can be determined using Monte Carlo techniques. The final equations are then solved."
> (See Christensen, especially: col.3, lines 42-55)

However, Christensen does not expressly teach that the experimental data is graphed. Official notice is given that it would have been obvious to one of ordinary skill in the art to graph the output data, because at the time the invention was made, it was well known in the art that graphing data was preferable to lists of numbers, because graphs made it easier to locate trends in the data.

46. Claims 59 and 65 are rejected based on the same reasoning as claims 36 and 42, *supra*. Claims 59 and 65 are storage medium encoded with machine-readable computer program claims reciting the equivalent limitations as are recited in method claims 36 and 42 and taught throughout Christensen.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is

(571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached at (571) 272-3716.

Any response to this office action should be faxed to (703) 872-9306, or mailed to:

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or hand carried to:

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon

Art Unit 2123

April 15, 2005

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER